



UNITED STATES PATENT AND TRADEMARK OFFICE

H.A

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,693	07/28/2003	Luc Struye	27500-169	5166

7590 09/11/2006

Joseph T. Guy Ph.D.
Nexsen Pruet Jacobs & Pollard LLP
201 W. McBee Avenue
Greenville, SC 29603

EXAMINER

SUNG, CHRISTINE

ART UNIT PAPER NUMBER

2884

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/628,693

Applicant(s)

STRUYE ET AL.

Examiner

Christine Sung

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>0606</u> . | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. The amendment filed on June 15, 2006 has been accepted and entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thoms (WO/0039809) (See US Patent 6,974, 959 B1 for translation. For the purpose of this office action, all references have been made to the translation) in view of Kano (US Patent 5,012,107 A).

Regarding claims 1 and 5, Thoms discloses a stimuable phosphor screen (Figure 1) comprising:

a phosphor layer or storage layer (element 16)

characterized in that an intermediate layer arrangement (see figure 1) of an x-ray absorbing layer or Lead Layer (element 18) and

a stimulated light reflecting foil (element 16) is present.

Thoms does not explicitly disclose a support or substrate layer beneath all of the layers. However, conventional stimuable phosphor screens/panels utilize a substrate in order to provide a surface to which other layers can be deposited and further provide structural support to the phosphor panel (see Kano, figure 2, element 1). Further, Kano teaches positioning the support layer beneath all of the other functional layers (i.e. phosphor layer, shielding layer and reflecting layers, see figure 2). One of ordinary skill in the art would be modify Thoms' invention with the conventional support layer as disclosed by Kano in order to reduce damage to the detector as well as provide a robust surface for vapor deposition to occur.

Regarding claims 2-4, Thoms discloses that the foil is made of lead but does not specify the exact compositions as claimed. However, lead cannot be applied directly to the substrate or device without a binder/matrix as it would not adhere to the surface and if applied directly would cause cracking and other unwanted results. Further the materials claimed are commonly used matrix materials, therefore one of ordinary skill in the art would be motivated to use such matrix materials with the invention as disclosed by Thoms in order to increase compatibility of the layers by controlling the matrix composition. (see pertinent art: Robinette discloses a conventional lead oxide screen used with x-ray devices (abstract) and discloses the absorbing layer is made of a lead oxide dispersed in a binder).

Regarding claims 6-10, Thoms discloses that the stimulated light reflecting foil (element 16) is made of aluminum (Column 2, line 64-65).

Art Unit: 2884

Regarding claims 11-12, Kano discloses that the support is selected from the group consisting of ceramics, glass, metals such as aluminum and polymeric films (column 5, lines 8-23).

Regarding claims 13-16, Kano discloses a phosphor screen or panel, wherein said intermediate layer arrangement has a surface that has been subjected to embossing for forming a fine concavo-convex pattern (column 7, lines 35-37).

Regarding claims 17- 28, Kano further discloses a two or more protective layers (column 8, lines 22-27). Although he does not specify the exact positioning of the layer as disclosed in the instant claims, it would have obvious to one having ordinary skill in the art to have used a protective layer between the substrate and intermediate layers and/or between the phosphor and the intermediate layers in order to decrease the likelihood of damage from moisture exposure to the various layers of the detector.

5. Claims 29-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thoms (WO/0039809) (See Us Patent 6,974, 959 B1 for translation. For the purpose of this office action, all references have been made to the translation) in view of Kano (US Patent 5,012,107 A) further in view of Hell (US Pre Grant Publication 2001/0007352 A1).

Regarding claims 29-32, Thoms in view of Kano discloses the limitations set forth in claims 1, 6, 11 and 12, respectively, and Kano further discloses a binderless phosphor (see claim 1). Kano further teaches that using a binderless phosphor significantly “improve[s] ...the charge ratio of the phosphor...” and also improves “the directivity of the stimulating light and stimulated emission in the stimuable layer. This results in an improvement of the sensitivity of the storage panel to radiation and, at the same time, an improvement in the sharpness of images.”

Art Unit: 2884

(Column 2, lines 35-42). Further Kano discloses that the phosphor is made using a vapor deposition or sputtering technique (see column 2, lines 43-46). One of ordinary skill in the art would be motivated to use the phosphor layer as disclosed by Kano with the invention as disclosed by Thoms in order to increase the sharpness of the images as well as improve the sensitivity of the detector. Thoms nor Kano disclose a needle shaped phosphor crystal. However, such a shape is a known phosphor shape especially for those crystals that are deposited using a vapor deposition or sputtering technique. Hell discloses a storage phosphor with needle shaped crystals that are deposited by a vapor deposition process (see claim 9). One of ordinary skill in the art would be motivated to use a needle shaped crystal in order to increase the sharpness of the image.

Regarding claims 33-44, Hell discloses that the needle shaped crystal comprises CsX:Eu (paragraph [0030]).

Response to Arguments

6. Applicant's arguments, see filed on June 15, 2006, with respect to the rejection(s) of claim(s) 1-44 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Thoms in view of Kano as well as Thoms in view of Kano further in view of Hell.

Art Unit: 2884

Conclusion

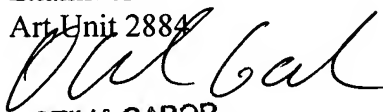
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Friday 7-3 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CS

Christine Sung
Examiner
Art Unit 2884


OTILIA GABOR
PRIMARY EXAMINER